

**ABSTRACT OF THE DISCLOSURE**

- 5 An optically transparent dielectric reflector (200) that reflects an incident millimeter-wave beam at a design frequency. The reflector (200) includes layers of different optically transparent dielectric materials. The thickness of the individual layers is chosen so that the transmitted waves cancel almost completely in the forward direction, yielding a high degree of transmission loss and substantial reflection. In the  
10 preferred embodiment, the invention is comprised of alternating layers of optical sapphire and air. In the best mode, there are seven sapphire layers, with outer sapphire layers (50) having a nominal thickness of 70.8 mils, inner sapphire layers (52) with a nominal thickness of 30.4 mils, and air layers have a nominal thickness of 32.0 mils. Vented metal spacers (54) are used to maintain optimal thickness of air layers.